DOCUMENT RESUME

ED 431 100 CE 078 760

AUTHOR	Lyle, Lola Williamson; Risch, Daniel J.
TITLE	Higher Education: Foundation for Kentucky Farms. A Primer for Students, Teachers, and Counselors. Research Memorandum No. 482.
INSTITUTION	Kentucky Legislative Research Commission, Frankfort.
PUB DATE	1998-12-00
NOTE	38p.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Agricultural Colleges; *Agricultural Education; *College Programs; Course Selection (Students); Degree Requirements; *Enrollment; Higher Education; *Majors (Students); Required Courses
IDENTIFIERS	*Kentucky

ABSTRACT

Through site visits to the agricultural programs at five of the Kentucky state universities (University of Kentucky, Kentucky State University, Morehead State University, Murray State University, and Western Kentucky University) and a meeting with representatives of the program at Eastern Kentucky University, this guide was created which describes the agricultural programs at each of the universities. Profiles of the agricultural programs include information about instruction, majors, curriculum, research and public service, and university farms. Five appendixes show the number of students enrolled in each undergraduate and graduate agricultural major and describe research programs in agriculture at the University of Kentucky; the number of students graduating with agricultural degrees in four majors at Morehead State from 1994-1997; and the number of students from Kentucky state universities who applied and were accepted in veterinary programs at Auburn University from 1995 to 1998. (KC)

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Higher Education: Foundation for Kentucky Farms

A Primer for Students, Teachers, and Counselors

Prepared by:

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and
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Research Memorandum No. 482

Legislative Research Commission

December, 1998

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Higher Education: Foundation for Kentucky Farms

A Primer for Students, Teachers, and Counselors

Presented by: Interim Joint Committee on Agriculture and Natural Resources

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Senator Bob Leeper, Co-Chair

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Research Memorandum No. 482
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MEMORANDUM

TO: Members of the Legislative Research Commission

FROM: Representative Herbie Deskins, Co-Chair
Interim Joint Committee on
Agriculture & Natural Resources

SUBJECT: Higher Education: Foundation for Kentucky Farms

DATE: December 2, 1998

During the first year of the 1998-1999 interim, a unique opportunity arose for the Interim Joint Committee on Agriculture and Natural Resources. The committee visited five of the six agricultural research farms managed by the state's universities. Two of the schools had not previously been visited during my tenure with the committee. I'm pleased that the inattention has been corrected.

Kentucky, although undergoing change, fiercely holds to its farming heritage and fights for the still considerable economic life generated by agricultural pursuits. Yet, those pursuits are undertaken in a difficult economic and political environment. Events in Washington threaten tobacco producers, weak world markets undercut commodity growers, and low, and trending lower, milk prices bankrupt Kentucky's dairies, to name just a few of the difficulties.

It is my belief that from the resourcefulness of our agricultural schools the foundation will be laid for our state to respond to these challenges.

This research memorandum seeks to provide you with the fruits of the committee's site visits. You may wish to share this information with high school students, teachers, and guidance counselors in your districts.

Within this memorandum you will find a general guide to the university based agricultural programs offered across the state. You will discover that each of the agricultural programs reported on here offers something special. You may be surprised at the diverse and complementary approaches these schools have taken to educate Kentucky farmers and farmers-to-be, and in doing so, to strengthen Kentucky's farm communities.

I should add at this point that an effort was made to visit Eastern Kentucky University but that tight scheduling prevented it. My hope is that a visit will be scheduled before the 1998-1999 interim ends, perhaps with the assistance of Representative Harry Moberly, a past member of the Interim Joint Committee on Agriculture and Natural Resources.

I wish to acknowledge the energy and leadership of Representative Drew Graham, the Chair of the Subcommittee on Agriculture and Small Business, Representative Roger Thomas, and Senator Joey Pendleton who together set up the visit to Murray State University and Western Kentucky University.

I also wish to thank committee Co-Chair Senator Bob Leeper, who agreed that I should serve as chair this first year of the 1998-1999 interim because this is the last year of my legislative service.

Higher Education: Foundation for Kentucky Farms
A Primer for Students, Teachers, and Counselors

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Research Memorandum No.
Legislative Research Commission
Frankfort, Kentucky
December, 1998

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Introduction

The Interim Joint Committee on Agriculture and Natural Resources conducted a series of meetings and site visits across the state to learn more about the educational foundation that underlies Kentucky's agricultural enterprises. Visits were made to the University of Kentucky, Kentucky State University, Morehead State University, Murray State University, and Western Kentucky University. Representatives of Eastern Kentucky University outlined their agriculture programs at a meeting held by the committee in Frankfort.

The inescapable conclusion drawn from this learning process is that each university strives to shape an agricultural program that emphasizes their particular strengths, yet in a way that complements the work and mission of the other schools.

The committee offers this memorandum to students interested in pursuing a profession in agriculture and teachers and school counselors who help determine the life's journeys of young Kentuckians.

The committee believes that within this memorandum, perhaps for the first time in one document, the reader will find information sufficient to make an informed decision in choosing where to pursue a post-secondary education in agriculture.

In addition to the site visits and meetings where the majority of the information for this memorandum was gathered, Legislative Research Commission staff conducted follow up telephone interviews and written surveys of university administrators and reviewed university website information.

University of Kentucky

In 1862, President Abraham Lincoln signed the Morrill Act authorizing states to sell public lands in order to establish land-grant universities that focused on the study of agriculture and mechanical arts. In 1887, the Hatch Act established a nationwide network of agricultural experiment stations to conduct research and disperse knowledge to farmers. Building upon these prior laws, the Smith-Lever Act of 1914 created the Cooperative Extension Service, which was mandated to take the findings of researchers from the universities to the fields of farmers.

The Kentucky General Assembly accepted the provisions of each of these acts and established A & M College - the direct forerunner of the University of Kentucky, the Kentucky Agricultural Experiment Station, and the Cooperative Extension Service.

To carry out the above mentioned responsibilities, the College of Agriculture at the University of Kentucky maintains a wide range of academic programs at the baccalaureate, master's, and doctoral degree levels. In addition to instruction, the College has created a comprehensive research program focused on the discovery of new technology and the development of the state's resources. The knowledge gained is transferred to producers and consumers in each Kentucky county through the Cooperative Extension Service.

The missions of the College of Agriculture are interrelated and dependent upon one another to properly function. Both state and federal laws require the College of Agriculture to provide statewide programs for agricultural instruction, research, and public service.

Instruction

As can be seen in the following table, the University of Kentucky offers a wide assortment of undergraduate majors [see also *Appendix 1* for a graph of average undergraduate enrollment by major]. The current curriculum teaches students both practical and scientific skills. This education will better prepare students for a variety of career paths that may be taken immediately upon graduation or to pursue further study in graduate school. In addition, undergraduate instruction enables students to understand the role of agriculture in meeting human needs while protecting the environment.

Table 1: Undergraduate Majors at the University of Kentucky College of Agriculture

Major	Abbrev.
Agriculture Biotechnology	ABIO
Agriculture Communications	ACOM
Agricultural Economics	AGEC
Agricultural Education	AGED
Agricultural Engineering & Biosystems	AGEN
Agronomy	AGRO
Animal Sciences	ANSC
Entomology	ENTO
Food Science	FOSC
Forestry	FORE
Horticulture	HORT
Agriculture Individualized Curriculum	AICU
Landscape Architecture	LAAR/PLAA
Natural Resource Conservation and Management	NRCO
Pre-Veterinary Medicine	PRE VET
Plant & Soil Science	PSSC
Public Service and Leadership	PSL
Non-Degree in Agriculture	NDAG
Undeclared Major in Agriculture	UNAG

Approximately 50 classes, covering topics from forestry to agricultural engineering, present opportunities for students to work on the research farms operated by the Agriculture Experiment Station. Students can observe demonstrations, conduct research, or solve real farm problems by applying what has been studied in the classroom. An added attraction for many College of Agriculture students is the possibility for part-time employment at a University farm.

Students at the the University of Kentucky also have the opportunity to major in pre-veterinary medicine. The pre-veterinary medicine programs offered at Kentucky colleges prepare students to meet requirements for veterinary school. Kentucky does not have a veterinary school, but it does have contracts with the veterinary schools of Auburn University and Tuskegee Institute in Alabama. Each year 34 seats are available at Auburn and two are open at Tuskegee. Due to the contracts between the Commonwealth and the universities, only legal Kentucky residents may apply for the seats [see *Appendix 5* for more information].

The University of Kentucky is the only institution in the state that offers doctoral degrees in the agricultural sciences. Consequently, other agricultural schools in the Commonwealth often send graduates to UK to continue their education (see *Appendix 2* for a graph of College of Agriculture graduate school enrollment).

This interdependence has encouraged the state agricultural schools to work together and avoid unnecessarily duplicating research projects.

Research and Public Service

The Agricultural Experiment Station and the Cooperative Extension Service conduct a variety of service programs that include diagnostic testing and regulatory and information delivery services. The research programs in agriculture are conducted through the Agricultural Experiment Station, and each department within the Station has its own research emphasis [see *Appendix 3* for a detailed list of departments].

The Cooperative Extension Service has the following responsibilities:

- to transfer technology to producers and consumers
- to develop citizenship and leadership skills through adult and 4-H programs
- to enhance environmental quality and the health and well being of the people of Kentucky.

Cooperative Extension Offices are located in each county of the state. Additional outreach is accomplished by eighty faculty extension specialists, located on-campus, at Princeton, and at Quicksand.

The Division of Regulatory Services and the Livestock Disease Diagnostic Laboratory are also important organizations that strive to meet the needs of Kentucky farmers and consumers. The Division of Regulatory Services is responsible for administering many consumer protection laws. The Livestock Disease Diagnostic Laboratory provides services to the livestock industries of the Commonwealth to control, prevent, and eradicate animal diseases.

Eastern Kentucky University

An agricultural curriculum has been in place at Eastern Kentucky University since 1906. The first agriculture classes taught fruit growing and provided opportunities for farmers to share information and learn new farming techniques.

President Robert Martin initiated the current direction of the Department of Agriculture in 1966. The goal he set for the Department was to produce entry-level, employable graduates in the agriculture and horticulture disciplines.

After undertaking a survey of agriculture schools nationwide, Eastern chose California Polytech State University's educational approach as its guide. The California program operates a complex of agriculture-horticulture facilities run by students, with appropriate oversight from the University. Students are required to work on the farm and to help run the agriculture research laboratories. The California approach clearly leads to developing marketable farming skills.

In modeling the EKU program after California Polytech, the university purchased the 721-acre Meadowbrook Farm Complex. Additionally, other smaller farm facilities of the University were enhanced to provide more hands-on learning. Opportunities for practical farm experience now include training with beef cattle, farrow to finish swine operations, turf management, and, as in the beginning of the school, fruit cultivation.

Instruction

Each curriculum in the Department of Agriculture focuses upon introducing students to the latest technical information through classroom instruction. The classroom work is reinforced as the students work in the laboratories and on the farm and in the University's horticulture enterprises. Each student is required to work at least one semester within the enterprises related to their agriculture or horticulture major.

One example of what a student at Eastern can gain from the University's hands-on educational approach is found in students working toward a Dairy Herd Management major. These students have the opportunity to work with a Holstein herd that can claim the oldest continuous enrollment in the Herd Improvement Registry Program of the Holstein-Friesian Association of America.

The EKU Department of Agriculture offers two degrees in its baccalaureate program - a Bachelor of Science in Agriculture and a Bachelor of Science in Horticulture. As can be seen in the following table, students can major in many different areas to receive one of these degrees.

Table 2: Undergraduate Majors at Eastern KY University's Department of Agriculture

Bachelor of Science in Agriculture Majors Available:	Bachelor of Science in Horticulture Majors Available:
Agribusiness Management	Ornamental Horticulture
Agriculture Mechanizations	Turfgrass Production
Agronomy & Natural Resources	
Dairy Herd Management	
Livestock Production	
Soils	
Vo-Ag Preparation	
Pre-Veterinary Medicine	

The Department also offers an Associate of Science degree in Technical Agriculture. The options available to students in this program can be seen in the following table.

Table 3: Associate Degree Options offered at Eastern KY University's Dept. of Agriculture

Associate of Science in Technical Agriculture Options Available:
Agriculture Mechanics
Dairy Herd Management
Floriculture & Floristry
Landscape Horticulture
Livestock Management
Turf Management

Community Service

The second mission of the Department of Agriculture is community service. The Department provides support service to area elementary and secondary schools, the Future Farmers of America program, farm groups, community groups, and other civic organizations. The following is a list of community service activities provided by the University.

Table 4: Community Services Provided by EKU

Community Service	Number
Academic Departments Served	14
Public Service Activities	75
On-the-Job Training Programs Conducted	138
Research or Experimental Projects Served	13
Special Problems Courses Served	4
Students Employed	28
Students Enrolled in University Courses Served	1309
Persons Served who are not University-Related	5445

Research

Giving students a practical education and serving the community are higher priorities than research in the use of the University's farms and horticulture enterprises. The farms are run as a business and the operating expenses are usually paid for out of revenues generated.

The Agriculture Department does not receive funding specifically for conducting research. Research efforts are further hindered by the lack of a graduate program in agriculture. However, the Department does initiate and conduct departmental research projects and participates in joint research projects with other universities, businesses, and agencies.

When research is undertaken, the project is measured against carefully drawn criteria to insure that the student's hands-on experience and the University's commitment to community service are enhanced. For example, does the research support the instructional program and provide appropriate, additional training experiences for students? Will the research provide information that will be useful in achieving the University's public service mission?

Research projects recently conducted or now underway include:

- Evaluation of "fiber digestion enhancing enzyme feed additive";
- Comparison of improvement in feed efficiency and rate of gain for feed additives in stocker beef cattle on a high roughage ration; and
- Evaluation of chemical runoff of surface applied herbicides.

Kentucky State University

The University was chartered in May of 1886 as the State Normal School for Colored Persons, only the second state-supported institution of higher learning in Kentucky. The school opened on October 11, 1887 with three teachers and fifty-five students. At the time, the mandate of the school was to train African American teachers for the African American schools of Kentucky.

These beginnings are reflected in today's student body. Kentucky State University offers a culturally and racially diverse student body and faculty. In a typical year, the institution's student body divides equally between African American and Caucasian students. About two percent of the students come from among fourteen foreign countries. The faculty is approximately 29 percent African American, 59 percent Caucasian, and 12 percent Asian.

Additionally, Kentucky State University hosts the National Center for Diversity. The Center is a network between the University's Cooperative Extension program, the University of Wisconsin, Pennsylvania State University, and the U.S. Department of Agriculture. The goal of the Center is the enhancement of diversity and pluralism within the Cooperative Extension System.

In 1890, the federal government designated the college a Land Grant institution. The Land Grant status broadened the mission of the school to include conducting research and teaching in the agricultural and food sciences and extending that learning into Kentucky's rural communities.

The University continued to expand over the years, and after several name changes it became Kentucky State University in 1973.

Instruction

Although KSU does not offer an undergraduate or graduate major in agriculture, it does provide students with the opportunity to minor in aquaculture and pre-veterinary medicine. In addition, the University's core course offerings provide a solid basis for pursuing many agriculture-related careers. For example, advanced biology students may pursue independent experimental research in conjunction with the agriculture research program.

Aquaculture instruction has become a recognized specialty at the University. It provides students with basic knowledge in fish nutrition and physiology, as well as practical experience in aquaculture production of freshwater aquatic organisms. Researchers in the program study the potential for small farmers to raise catfish, freshwater shrimp, and paddlefish, to name only a few research subjects. The minor provides sufficient training to support further study at the

graduate level and meaningful practical experience for students who plan to enter the work force immediately upon graduation.

The University's aquaculture researchers and students work closely with the Kentucky Aquaculture Association and farmers who are successfully applying the lessons learned at KSU's farm research ponds.

Based partly on the promise fish farming holds as a good cash crop for small farms, KSU plans to add a Master of Science degree program focusing on aquaculture.

In addition to aquaculture, students may work toward gaining entry to a school of veterinary medicine. Students in this program work toward being admitted to the veterinary medicine schools of Tuskegee University or Auburn University.

Research and Community Service

With its firm grounding as a Land Grant institution, Kentucky State University has embarked upon the following mission: To help resolve agricultural, educational, economic, and social problems of the people of Kentucky, especially those with limited resources living in rural communities. Applied specifically in the context of agriculture, the University directs its educational outreach and research efforts towards assisting minority and small farmers.

A vehicle for carrying out this mission is the University's participation in the Cooperative Extension System. The Cooperative Extension System is a nationwide network established by the U.S. Congress to extend research-based knowledge and technology from the laboratory to the community. The system is a partnership between Land Grant universities, the U.S. Department of Agriculture, and counties in each state. One means by which the University reaches small and minority farmers is through extension agents, who provide a direct link between the research and knowledge gained at the school and Kentucky's farmers.

Out of this partnership, Kentucky State University can offer students the opportunity to serve as assistants in research projects funded by the U.S. Department of Agriculture's Cooperative State Research Service. Other research opportunities arise from partnerships with other federal agencies, state agencies, and private industry. These projects often offer internship possibilities for students. Many of the projects can pay students for their work.

One example is the U.S. Department of Agriculture's Summer Intern Program. Students at the University may apply for summer employment in the fields of agriculture and forestry. The internship openings are available at over twenty USDA agencies scattered across the country.

The University also collaborates with Kentucky's other Land Grant institution, the University of Kentucky. This cooperative effort allows students the opportunity to benefit from the shared research and resources between the two schools.

The University also conducts a variety of agricultural research projects at the Kentucky State University Research Farm. Projects related to developing the paw-paw, a native Kentucky fruit, combating the trachial mites that have devastated Kentucky's bee population, and testing techniques for raising poultry without confinement are only a small sampling of applied research underway at the farm.

Morehead State University

Morehead State University traces its beginnings to the Morehead Normal School, which opened its doors in 1887. In 1922, the Kentucky General Assembly changed the name of the college to Morehead *State* Normal School and began to fund the institution. Since then, the University has evolved from being a small teachers college to a regional university that serves Kentucky and Appalachia.

Until university status was granted by the Commonwealth in 1966, the institution's primary mission was the training of teachers. However, the curriculum now embraces nearly 120 academic programs on the associate, baccalaureate, and graduate levels.

The Department of Agricultural Sciences at Morehead was founded in 1923.

Student instruction is the primary mission of the Department of Agricultural Sciences at Morehead State University. That instruction has been tailored to fit the farming undertaken in the east Kentucky hills surrounding the school. The area is not suited to large-scale farming. The farms of the region are small and many are owned by part-time farmers, who rarely cultivate row crops.

Another regional characteristic shaping agricultural teaching at Morehead is the presence of only a few large agribusinesses.

These regional characteristics have led the Department to focus on helping small-farm owners through education and research/extension services.

Instruction

The Department of Agricultural Sciences offers a variety of associate and baccalaureate degrees. The school also offers a Master of Science degree in Vocational Education, which prepares students to teach high school Vocational Agriculture courses [see *Table 5* for a complete listing of degrees].

MSU is the only college in the state that offers a two-year program in Veterinary Technology. The University's Veterinary Technology program offers Vet-Tech majors the chance to gain hands-on experience using state of the art facilities [see *Appendix 4* for more information].

In the past few years, the Veterinary Technology Program has worked with pharmaceutical companies on various drug studies. Some of these studies were to help the companies obtain U.S. Food and Drug Administration approval of certain drugs.

The program is also involved in a spay and neuter project with the Rowan County Fiscal Court Humane Society. This partnership allows Morehead vet-tech students to actively assist in many small animal veterinary procedures.

The University also offers a two-year equine technology program. A unique aspect of the program is the breadth of the course offerings. For example, basic as well as advanced courses are available in three styles of riding: stockseat, saddleseat, and huntseat.

Table 5: Academic Programs in the Department of Agricultural Sciences at Morehead State University

Pre-Professional Programs:
Pre-Forestry
Pre-Veterinary Medicine
Associate of Applied Science Programs (2-year degrees):
Agricultural Technology **Veterinary Technology**
Agribusiness
Agricultural Production
Equine Technology
Ornamental Horticulture
Bachelor of Science Programs (4-year degrees):
Agricultural Education
Agribusiness
Agricultural Economics
Agronomy
Animal Science
General Agriculture
Golf Course Management
Horticulture
Agriculture
Master of Science, Vocational Education

Research/Community Service

Research conducted by the Department is specifically focused to offer an immediate benefit to students enrolled in agriculture programs or to help farmers in the service region.

The following are examples of the applied farm research performed by the Department:

- Corn varietal trials
- Rotational grazing in pasture
- Use of tobacco stripping wheel
- Use of outdoor curing structures for tobacco
- Grape cultivar study
- Promotion of pick-your-own horticultural crops

Murray State University

Murray State Normal School was established in 1922, and the first agriculture courses were offered in 1925. At that time, only six courses were taught in agriculture. Course offerings included General Agriculture, Animal Husbandry, Horticulture, Farm Crops, Soils and Fertilizers, and Agricultural Economics. By 1926, the University focused on educating students to become teachers. Eventually, in 1966 the school became Murray State University.

Instruction

Students often choose Murray State's Department of Agriculture because they have access to a quality program in their area of interest in a convenient location. Those interests are satisfied by course offerings in the subjects of plant science, animal science, soils, horticulture, engineering, education, and business.

The University services an area of Kentucky where agriculture is the most important industry. The top five Kentucky counties in corn, soybean, wheat, and dark tobacco production are in the region surrounding Murray State University.

Murray's Department of Agriculture graduates often accept positions in the following agricultural careers: plant breeder, soil scientist, soil conservationist, extension agent, sales representative, banker, teacher, nursery specialist, landscape designer, greenhouse manager, farmer, nutritionist, animal breeder, economist, forester, processor, veterinary assistant, and veterinarian.

The Department of Agriculture offers undergraduate and graduate curriculums leading to degrees in several areas [see *Table* 6 for a detailed list of degree programs].

Table 6: Academic Programs in the Department of Agriculture at Murray State University

Pre-Professional Programs:
Pre-Forestry
Pre-Veterinary Medicine
Associate of Science Degree (2-year degree):
Agricultural Science & Technology
Bachelor of Science Degree in Agriculture:
Agribusiness Economics
Agricultural Education
Agriculture Science
Agronomy
Animal Technology
Agricultural Mechanization
Animal Health/Equine Technology
Horticulture
Animal Health Technology
General Agriculture
Comprehensive Graduate Program:
Master of Science

Two programs of special merit at Murray include the Animal Health Technology Program and the equine science program.

The American Veterinary Medical Association accredited four year Animal Health Technology Program trains students to become veterinary assistants and animal health pharmaceutical representatives. The program curriculum requires that all students work one semester at the animal diagnostic laboratories of the Breathitt Veterinary Center in Hopkinsville. Including students in the pre-veterinary medicine track, the AHTP has a total enrollment of over 200 students.

The Equine Science Program attracts many students to the University and the Department. The focus of this Program is on academic instruction in equine production and management, as well as riding. Students in the program are given opportunities to exhibit riding skills through competitive activities, such as equestrian shows and rodeos.

Murray has the only college rodeo program in the state.

The MSU Equine Center has much to offer to the student wanting to study equine science. The Center features: barns for boarding of horses; a 40,000 square foot lighted outdoor arena for equine academic training and team practice; a 20,000 square foot outdoor arena for rodeo team practices, with permanent rough-stock facilities and a calf chute; a 6,000 square foot outdoor arena; a hay storage facility; a treadmill; round riding pens; and a pasture riding area.

Research

The Pullen farm at Murray State University offers horticultural and agronomy students abundant hands-on experience. Floral beds have been installed on the north end of the farm. These beds showcase many perennial flowers, and annual flowers are added for seasonal colors. The demonstration beds offer the opportunity to study plant identification and basic landscape principles and provide a research area for new plants.

The farm contains an agronomy test area where students participate in studies of weed control, soil fertility, and basic crop science. These areas will be used for more extensive research and provide an asset to farmers, educators, and students.

In the future, the farm will have a small fruit area, greenhouses, a turf test area, and a vineyard. An arboretum is also planned for the farm.

The North Farm Complex is currently undergoing renovation and preparation for a new Department of Agriculture animal organic waste pasteurization plant. The new facilities will provide state-of-the-art systems for a multitude of research projects. The North Farm Complex will continue to house the Department's Beef and Sheep facilities, serving a vital research role in various breeds of livestock.

Additional research opportunities are created at the MSU Equine Center. Four stallions are quartered at the Center as part of an extensive breeding program. Fifteen mares are foaled each year, which provides students an excellent opportunity for hands-on instruction in foaling.

The A. Carmen Pavilion, located near the Livestock Exposition Center on the West Farm complex, houses the classrooms and laboratories for the Animal Health Technology and the Pre-Veterinary Medicine programs offered at Murray State University. These facilities provide students the opportunity to obtain hands-on instructional experience with animal diseases, surgery, and anatomy.

Western Kentucky University

Agriculture was part of the Science Department when the Western Kentucky State Normal School was established in 1907. In 1911, agricultural courses were organized into an Agriculture Department which, along with the University, has grown through the years.

Similar to many other colleges established at the turn of the century, Western Kentucky University originally functioned as a teacher's college. Within that broad mandate, the agriculture program was initially designed to graduate students who would teach vocational agriculture in high schools. Around 1950, the focus of both the University and the Agriculture Department broadened to include a more comprehensive array of courses.

Instruction

To better prepare its students for the workplace, Western's Department of Agriculture stresses student academic performance. The result of this approach is seen in increasing ACT scores, higher class rankings, and higher grade point averages of its students.

The Department emphasizes hands-on experience, communication between students and professors, and an education grounded upon a broad range of courses. Teachers in the Department place a priority on their roles as teachers and welcome student-teacher interactions.

All Department of Agriculture majors must take one or more courses in several disciplines within agriculture - animal science, agribusiness, plant and soil science, mechanics - but they still have the opportunity to specialize in the discipline of their choice [see *Table 7* for a complete list of degrees].

Table 7: Academic Programs in the Department of Agriculture at Western Kentucky University

Pre-Professional Programs:
Pre-Forestry
Pre-Veterinary Medicine
Associate of Science Degree (2-year degree):
Agriculture Technology & Mgt.
Turf & Golf Course Mgt.
Bachelor of Science Degree:
Agribusiness
Agricultural Education
Agronomy/Plant Science
Agronomy/Soil Science
Animal Science
Dairy Science
Horse Science
Horticulture
Turf & Golf Course Mgt.
General Agriculture

First-year students are required to take a 1-credit hour seminar. This class helps students adjust to college life and to become familiar with the program. Students meet and interact with the Departmental faculty. They learn more about their peers as well. The value of the seminar is measured by the retention rate of Department of Agriculture students, the highest of all the University departments.

Department advisors closely monitor student course selections. This system helps keep students on track within their undergraduate degree programs.

Students are given many opportunities to gain hands-on experience in production agriculture, agricultural industry, and government agencies. This experience is gained through class laboratories on the farm (which is located near campus), by working in greenhouses, and participating in summer internships. Some recent internships included placements with American Cyanamid, Zeneca Seeds, Disney World, Valhalla Golf Course, and the Livestock Conservation Institute.

The Brown Agricultural Exposition Center also offers students additional practical educational experiences through livestock shows and sales and various other exhibits and public service events held at the facility. Additionally, many student clubs earn money from concession sales at the Exposition Center. These funds are often used for educational trips or other student activities.

Research

The Department of Agriculture focuses its research on various aspects of production agriculture that affect the economic and social well being of the producers and the agricultural industry of Kentucky. The Department designs research projects based on the expected applicability of results, as well as the educational experience to be gained by the student. The following is a partial list of research projects performed.

- Tobacco - herbicide tests and variety trials.
- Agronomy - herbicide tests, population, spacing, and varieties.
- Turf - variety trials and heat tolerance.
- Leaf Project - composting biosolids with leaves, wood chips, and sawdust.
- Education - U.S. Department of Agriculture Fund for Rural America: testing model for communication between farmers and migrant workers.

In addition to these experiments and tests, the Department has conducted cooperative research and demonstration trials with Garst Seed Company, Zeneca Agricultural Products, Miles Enterprises, and Southern States Cooperative. Weed control trials have also been performed with support from Dow, Dupont, Zeneca, BASF, Bayer, Novartis, and American Cyanamid.

University Farms

University of Kentucky

Research activities of the Kentucky Agricultural Experiment Station, the research division of the College of Agriculture, are conducted at Lexington, Princeton, Quicksand, and Owenton and in counties throughout the state. Locations of the experimental facilities provide conditions representative of most sections of the state.

- *Campus* - Laboratories and specialized equipment for all research program areas.

- *Coldstream, Maine Chance, Spindletop Farms* - Beef and dairy cattle, poultry, horses, sheep, and swine; forages and grain crops, tobacco and turf.

- *South Farm* - Fruits and vegetables, ornamentals.

- *UK Animal Research Center (Woodford Co.)* - This farm was purchased in late 1991 as a location for development of advanced food animal research programs. The farm is in Phase I of development as a research facility. Phase II will see the development of a new dairy, and the construction of a Learning Center. The Learning Center will contain a large animal demonstration area and a teaching lab.

- *Research and Education Center and West KY Substation Farm (Caldwell Co.)* - These facilities are devoted to research on grain crops, beef cattle, swine, fruits and vegetables, forages, and tobacco.

- *Robinson Substation and Robinson Forest (Breathitt Co.)* - The substation, located at Quicksand, conducts research on fruits and vegetables, ornamentals, forages, grain crops, tobacco, and wood utilization. Quicksand is also the headquarters for research conducted in Robinson Forest, which spreads over parts of Breathitt, Perry, and Knott counties and is the site of forestry and watershed management research.

- *Eden Shale Farm (Owen Co.)* - This farm is where experimental and demonstration studies are conducted on forage crops, tobacco, fruits and vegetables, and beef management.

Eastern Kentucky University

The farm operation at EKU consists of the 721-acre Meadowbrook Farm Complex located near Richmond, a tract of approximately 50 acres located in the city of Richmond, a recently acquired 141 acres adjacent to campus, and smaller parcels of land around the classroom area used in the horticulture program.

- *Meadowbrook Farm activities:*
  150 Beef cows
  300 Backgrounding beef steers and heifers
  50-Cow registered Holstein herd
  55-Sow farrow-to-finish swine operation
  40-Ewe flock of sheep

  Caged catfish operation
  Tobacco
  Forage and crop production enterprises to produce feed for animals

- *50-Acre Location*
  Production of corn for livestock enterprises

- *Campus Horticulture Parcels*

  3 Quonset hut greenhouses, 1 Quonset hut style shade house, 1 glass greenhouse, 1 fiberglass greenhouse - used to grow crops and maintain specimens for our greenhouse floriculture program.

  Turf plots - demonstration, teaching, applied research in the turf management program.

  Specimen area and nursery - used in landscape program.

  Fruit orchard.

Kentucky State University

KSU maintains a 200-acre farm just outside of Frankfort. At the farm, research is conducted in the aquaculture ponds, greenhouse, and a nutrition center. Work is progressing on determining the most economical mix of aquaculture products for Kentucky's small farmers. Currently, catfish, striped bass, and freshwater shrimp show promise.

Other forms of research are underway at the farm, including the following:

- Development of paw-paw fruit
- Maintaining production yield with fewer chemicals
- Protecting honey bees from mites
- Increasing the nutritional value of food
- Testing methods of raising poultry without confinement

Morehead State University

To provide additional hands-on experiences in certain classes, a greenhouse is located next to Reed Hall on the main campus and a 325-acre farm serves as a teaching laboratory for the department.

- The following agronomic and horticulture crops are grown on the farm:
  - Corn
  - Tobacco
  - Pasture
  - Hay
  - Various vegetable crops
  - Grapes
  - Apples

- The following livestock are also located on the farm:
  - Beef Cattle
  - Swine
  - Horses
  - Sheep
  - Ostrich

- Two additional greenhouses are also located on the university farm to support the horticulture program. Float beds are also maintained for the production of tobacco plants.

- A kennel is located on the farm to provide dogs, cats, and other small animals for use by the Veterinary Technology program. A veterinary teaching clinic is located on the farm that has both large and small animal operating rooms so that students can assist veterinarians. As part of their training, the Vet. Tech. students also provide health care for the various farm animals on the farm.

- A 170' x 250' pavilion is located on the farm to provide space for the teaching of the various equestrian classes.

Murray State University

The focus and usage of the Murray State University farm centers on educational priorities. The farms are used as a hands-on supplement to academic instruction. There are 3 university farms, which are utilized in the following ways:

- West Farm - 269 acres used for equine and dairy-related activities, as well as associated forages and pastures.

- Pullen Farm - 42 acres devoted to horticulture and agronomy as a teaching laboratory.

  Applied Research:
  - New technologies in crop production
  - Demonstration plots of new varieties

  Future Plans:
  - Arboretum
  - Greenhouse Complex

- North Farm - 75 acres containing beef, sheep, and swine operations.

  Applied Research:
  - Warm season forage evaluation
  - Comparing different types of bio-organic waste for forage production
  - Comparing different types of bio-organic waste for cattle

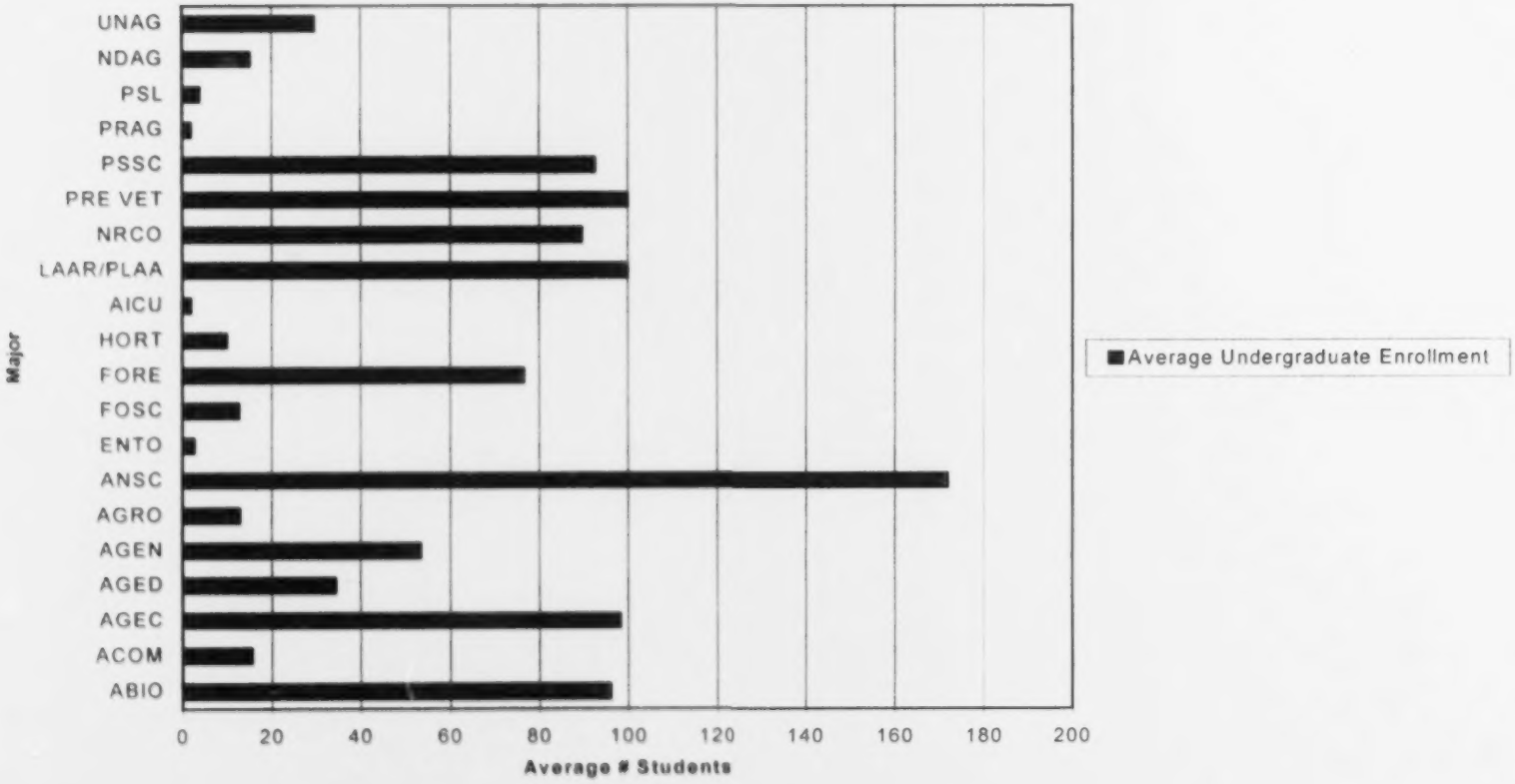
  Future Uses and Research:
  - New technologies in animal waste management

Western Kentucky University

Facilities
- Western Kentucky University Farm (785 acres)
- Dairy Farm
- Brown Center
- Taylor Center - turf facilities
- Laboratories
- Computers
- Greenhouses

Appendix 1

UK College of Agriculture Average Undergraduate Enrollment: 1995-1997

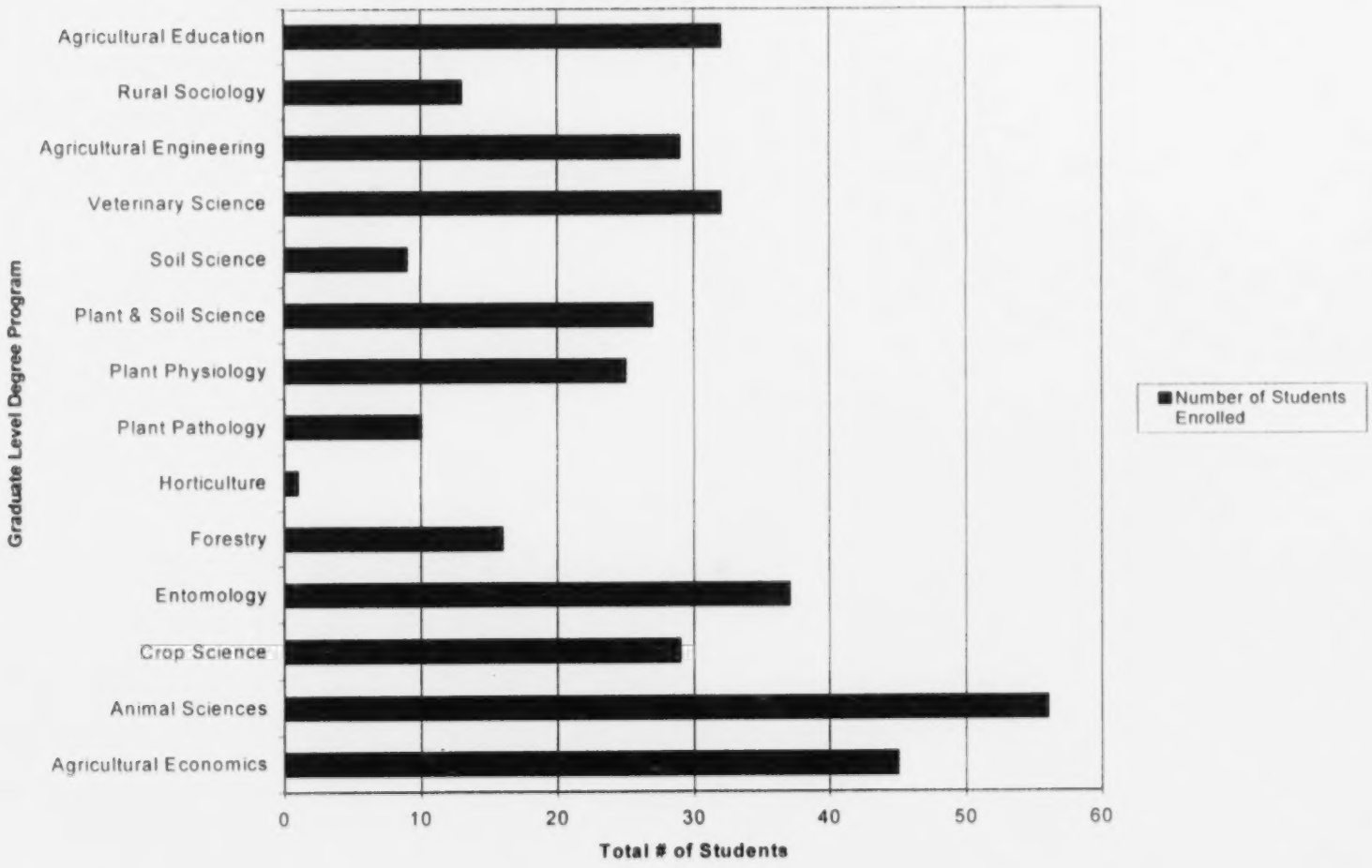


Undergraduate Majors/Abbreviations

ABIO	Ag. Biotechnology	AGEC	Ag. Economics	AGEN	Ag. Engineering & Biosystems	ANSC	Animal Sciences
ACOM	Ag. Communications	AGED	Ag. Education	AGRO	Agronomy	ENTO	Entomology
FOSC	Food Science	HORT	Horticulture	LAAR/PLAA	Landscape Architecture	PRE VET	Pre-Veterinary Medicine
FORE	Forestry	AICU	Ag. Individualized Curriculum	NRCO	Nat. Resource Con. & Mgt.	PSSC	Plant & Soil Science
PRAG	Production Ag	PSL	Public Service and Leadership	NDAG	Non-Degree Ag	UNAG	Undeclared Major in Ag.

Appendix 2

Graduate School Enrollment at the UK College of Agriculture - Fall 1997



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Appendix 3

Research programs in Agriculture at the University of Kentucky
- Conducted through the Agricultural Experiment Station;
- Organized into the following departments:

(1) **Agricultural Economics** – serves farmers, agribusiness and consumers through the development of a more efficient utilization of economic resources in the management and operation of enterprises as well as in the production, marketing, and distribution of food and fiber. It operates the International Agricultural Trade Development Center, which is funded by a major federal grant and matched by University funds.

(2) **Biosystems & Agricultural Engineering** – strives to solve existing and emerging engineering problems through research on soils and water quality, power and machinery, structures and environments, electric power and processing, and food engineering. This department is a significant contributor to interdisciplinary programs in food science, technology, and integrated agricultural systems research.

(3) **Agronomy** – directs research toward generating new technology as well as solving problems related to the more efficient, profitable production of crops under conditions conducive to conservation and resource protection. The Department directs research efforts related to the development of no/minimum-tillage agriculture and plant genetic engineering.

(4) **Animal Sciences** – has as its objective the production of higher quality, more efficiently produced animal products through research efforts in animal nutrition, reproductive biology, intermediary metabolism, genetics, and physiology. The Department directs research/development activities in food science and protection of food supplies.

(5) **Entomology** – seeks to provide a better understanding of insect identification, distribution, biology, ecology, physiology, economic importance, and control through research efforts in insect taxonomy, insecticide toxicology, insect ecology/behavior, physiology of insects/mites, and the integrated control of insect pests.

(6) **Forestry** – directs its research programs toward improving the economic climate and quality of life in Kentucky while optimizing the return of the various components of the forest resource to landowners and industry. The Department manages and conducts research in Robinson Forest, one of the largest tracts of prime forested land in the state, and conducts research on other forested tracts in Eastern Kentucky.

(7) **Horticulture & Landscape Architecture** – its research programs are directed to solve the many biological/technical problems which confront produce growers, ornamental nurseries, florists, landscapers, home gardeners, and the general consuming public.

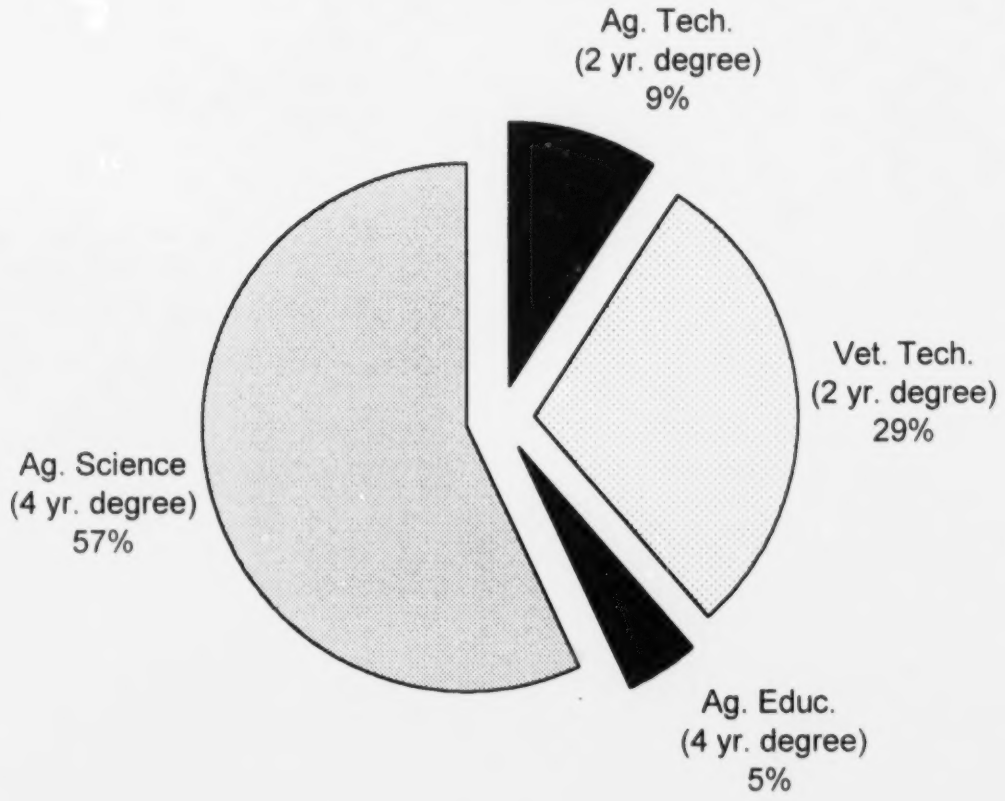
(8) **Plant Pathology** – research efforts are directed toward obtaining a fundamental understanding of the disease processes in plants as well as toward developing methods by which important diseases of Kentucky's crops may be controlled.

(9) **Rural Sociology** – attempts to create a more efficient utilization of human resources and social institutions through research in domestic and international agriculture, family studies, demography, community development, and natural resources.

(10) **Veterinary Science** – research efforts are directed to the discovery of causative agents of animal disease through efforts in virology, bacteriology, parasitology, pathology, immunology, and pharmacology. The research program also emphasizes equine biomechanics and reproductive physiology.

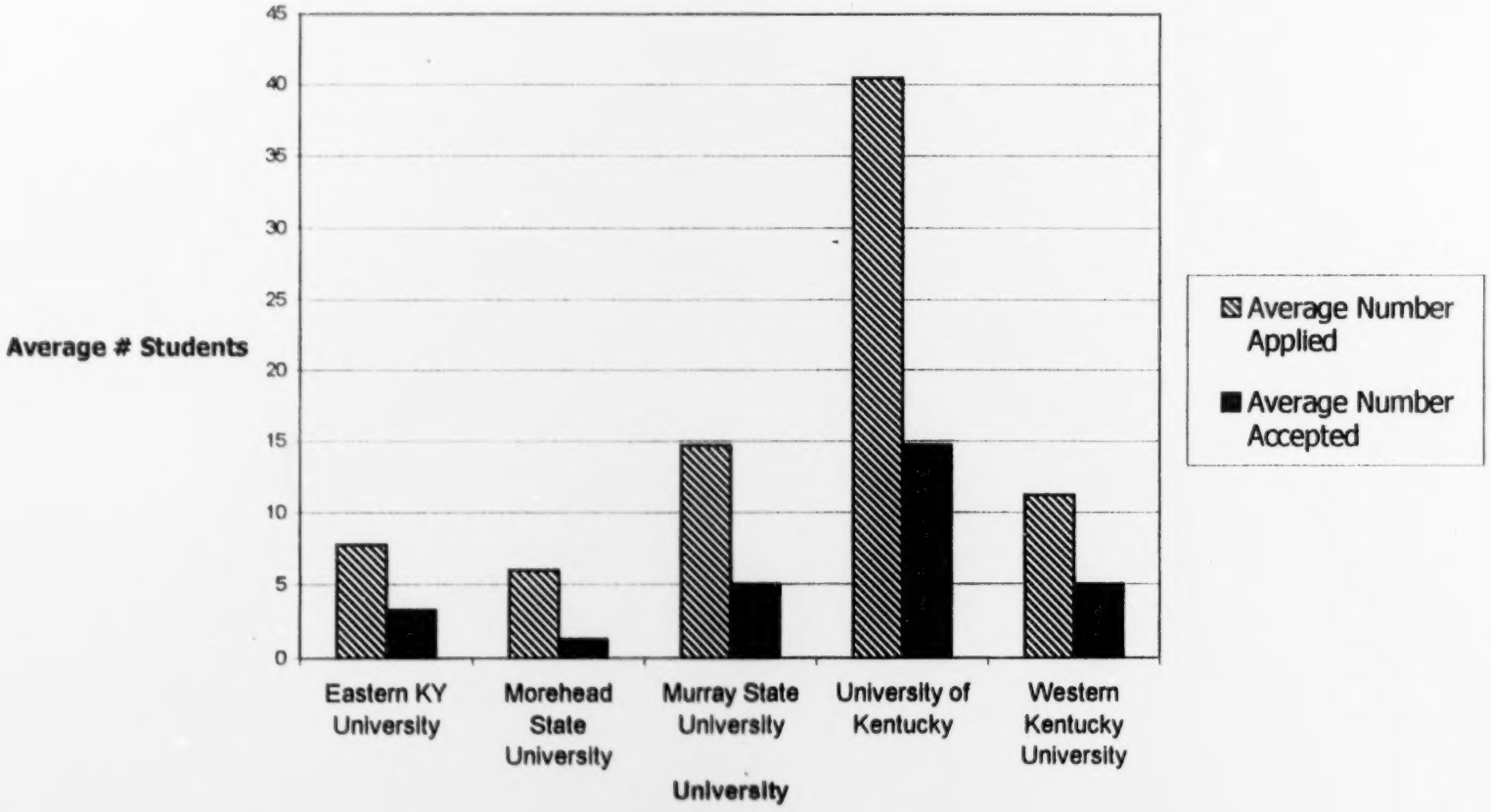
Appendix 4

Total # of Students Graduating with Agriculture Degrees at Morehead State: 1994 - 1997



Appendix 5

KY Agriculture Students: Average Auburn Veterinary Program Enrollment 1995-1998



*During the same time period, two Kentucky State University students were accepted at Auburn University or Tuskegee University.